Problem A. GCD Arrays

Time limit 2000 ms
Mem limit 262144 kB

Consider the array a composed of all the integers in the range $[l, r]$. For example, if $l = 3$ and $r = 7$, then $a = [3, 4, 5, 6, 7]$.

Given l, r, and k, is it possible for $\gcd(a)$ to be greater than 1 after doing the following operation at most k times?

- Choose 2 numbers from a.
- Permanently remove one occurrence of each of them from the array.
- Insert their product back into a.

$\gcd(b)$ denotes the greatest common divisor (GCD) of the integers in b.

Input

The first line of the input contains a single integer t ($1 \leq t \leq 10^5$) — the number of test cases. The description of test cases follows.

The input for each test case consists of a single line containing 3 non-negative integers l, r, and k ($1 \leq l \leq r \leq 10^9$, $0 \leq k \leq r - l$).

Output

For each test case, print "YES" if it is possible to have the GCD of the corresponding array greater than 1 by performing at most k operations, and "NO" otherwise (case insensitive).

Sample 1

Input	Output
9 1 1 0 3 5 1 13 13 0 4 4 0 3 7 4 4 10 3 2 4 0 1 7 3 1 5 3	NO NO YES YES YES YES NO NO YES

Note

For the first test case, $a = [1]$, so the answer is "NO", since the only element in the array is 1.

For the second test case the array is $a = [3, 4, 5]$ and we have 1 operation. After the first operation the array can change to: $[3, 20]$, $[4, 15]$ or $[5, 12]$ all of which having their greatest common divisor equal to 1 so the answer is "NO".

For the third test case, $a = [13]$, so the answer is "YES", since the only element in the array is 13.

For the fourth test case, $a = [4]$, so the answer is "YES", since the only element in the array is 4.